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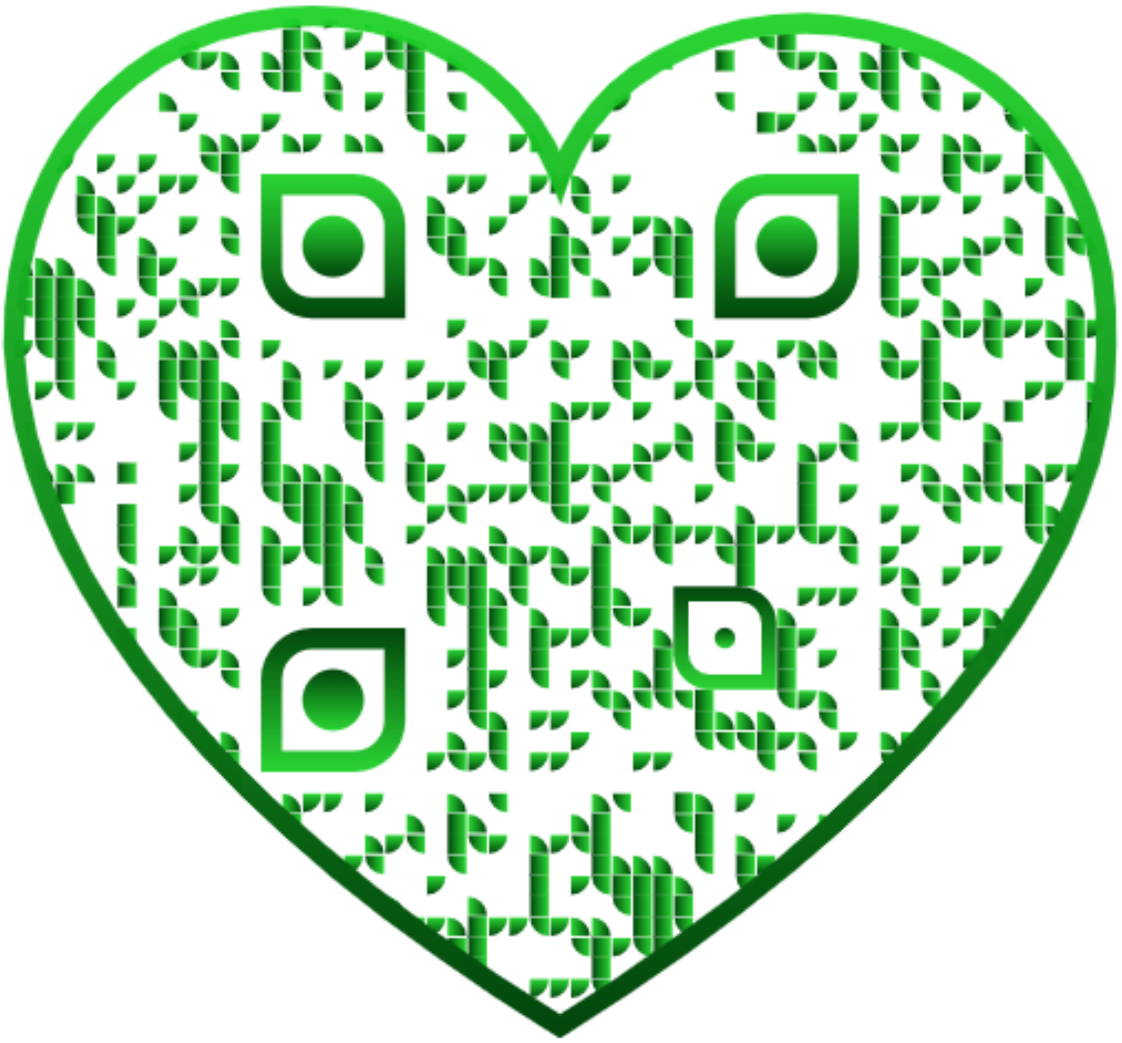

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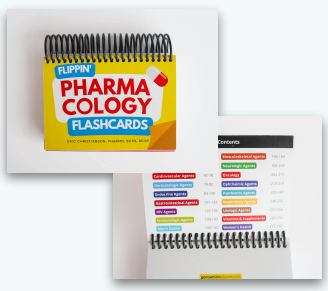

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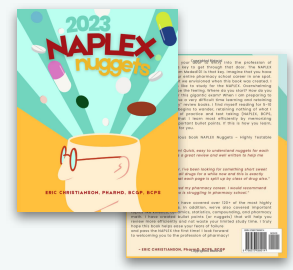

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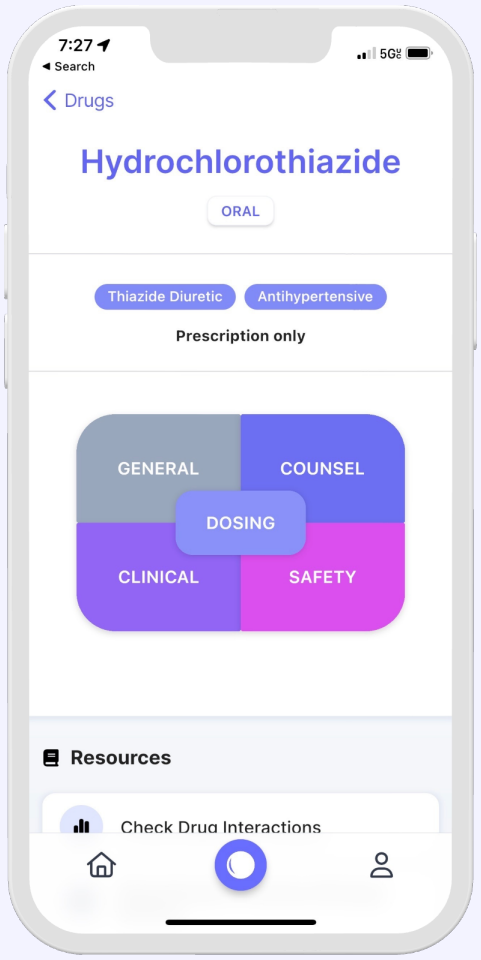

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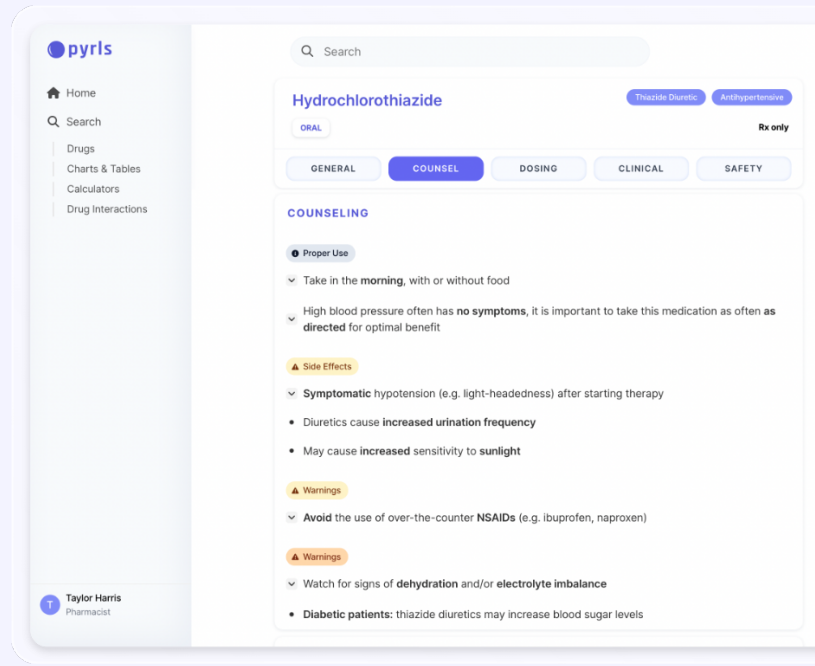

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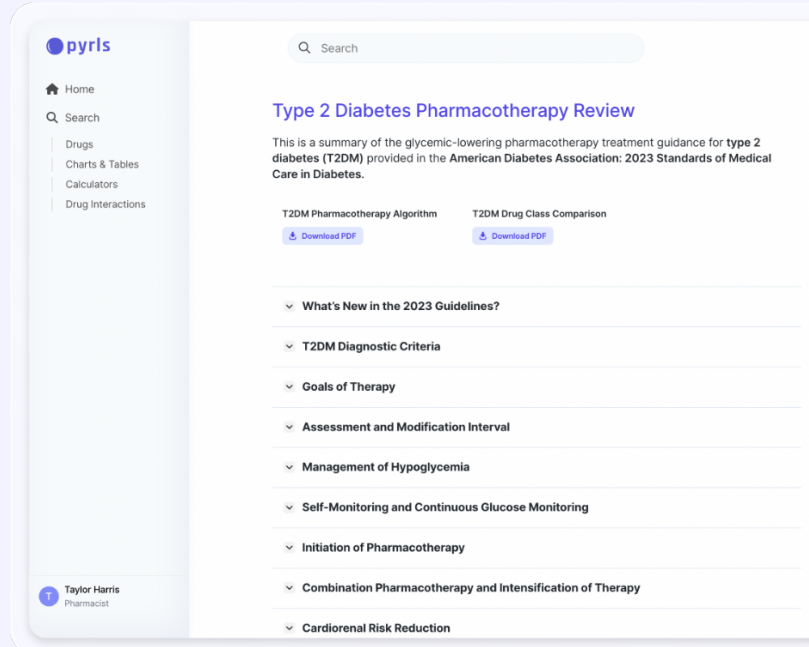

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1. A 34-year-old female presents with symptoms of fatigue, weight gain, increased sensitivity to cold, worsened mood and constipation. Current lab work reveals a hemoglobin of 14.2 g/dL, creatinine of 1.1 mg/dL, B12 of 400 pg/mL, folic acid of 15 ng/mL, and TSH of 26.5 mIU/L. Current medications include: Synthroid 50 mcg daily, Zoloft (sertraline) 75 mg daily, and folic acid 1 mg daily. The patient is taking all medications as directed. What would you recommend?

   A. Increase Zoloft to 100 mg daily
   B. Consider the addition of vitamin B12
   C. Increase Synthroid to 75 mcg daily
   D. None of the above

2. How many mg of a medication will it take to create a 1,500 mL product at a concentration of 1:10,000?

3. Which of the following would be most appropriate in a patient with HIV requiring PCP (Pneumocystis carinii pneumonia) prophylaxis?
   A. Doxycycline
   B. Bactrim
   C. Erythromycin
   D. Augmentin

4. Which of the following medications for diabetes would carry the least risk of hypoglycemia?
   A. Glucophage
   B. Glucotrol
   C. Lantus
   D. Humalog

5. A physician writes for a dose of Tylenol 20 grains twice daily. What dose of acetaminophen is this?
   A. 325 mg twice daily
   B. 650 mg twice daily
   C. 1000 mg twice daily
   D. 1300 mg twice daily

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Answer the following 3 questions based on the case:

A 48-year-old male has a history of bipolar disorder, Crohn's disease, and was diagnosed with atrial fibrillation within the last year. He was prescribed amiodarone for atrial fibrillation. Other medications include Depakote, Lamictal, aspirin, and azathioprine.

Vital signs include: Pulse = 76 bpm, Blood pressure = 135/68 mmHg, Respirations = 18 breaths per minute, weight = 168 lbs. His current laboratory testing reveals Creatinine = 1.1 mg/dL, Potassium = 4.3 mEq/L, sodium = 139 mEq/L, albumin = 4.1 g/dL, AST = 798 U/L, ALT = 924 U/L, hemoglobin = 14.1 g/dL, and CPK = 86 units/L.

6. Which medications could contribute to the lab abnormalities? (select all that apply)
   - A. Depakote
   - B. Aspirin
   - C. Azathioprine
   - D. Amiodarone

7. Based upon the medication list, which of the following is a significant interaction?
   - A. Depakote/Lamictal
   - B. Amiodarone/Aspirin
   - C. Azathioprine/Aspirin
   - D. Depakote/Azathioprine

8. Our patient from above has also had an issue with multiple infections. Which medication puts him at the highest risk for recurrent infections?
   - A. Lamictal
   - B. Amiodarone
   - C. Depakote
   - D. Azathioprine

9. In a patient with a creatinine clearance of less than 30 mL/min and ongoing edema that is not helped by increasing the furosemide dose, which of the following would be the best option to help with edema?
   - A. Adding hydrochlorothiazide
   - B. Adding Bumex
   - C. Adding metolazone
   - D. Adding captopril

10. Which of the following hypertension medications can also be beneficial for BPH symptoms?
    - A. Norvasc
    - B. Hytrin
    - C. Zestril
    - D. Lasix

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11. Which of the following is not a common physiological complication in the aging of an elderly patient? (Select all that apply)
    A. Skin thickening, increasing the risk of skin and soft tissue infections
    B. Slowed GI tract and possible reduced absorption of some vitamins and minerals like B12 and iron
    C. A drop in GFR which can contribute to the accumulation of many medications
    D. Increased concentration of albumin due to loss of intravascular fluid/dehydration
    E. Loss of muscle mass, reduced physical conditioning

Answer the following three questions based on the information:

You have a patient who has been given a 500 mL bag that contains 60 mEq of potassium chloride. The IV is delivering 20 drops per mL at a rate of 8 drops per minute. It has been running for about 3 hours.

The molecular weight of K+ = 39 g/mol and Cl- = 35.5 g/mol.

12. How many mEq of potassium has this patient been given? Round to the nearest $1/100^{th}$ decimal place.

13. How many mg of potassium chloride has this patient been given? Round to the nearest whole number.

14. Which of the following medications would be likely to contribute to hyperkalemia, especially in patients already receiving an ACE inhibitor or an ARB? (select all that apply)
    A. Spironolactone
    B. Trimethoprim
    C. Lasix
    D. Zaroxolyn

15. Rate these in order from highest strength of evidence to lowest?
    A. Case study
    B. Randomized controlled clinical trial
    C. Cohort study
    D. Case controlled series

16. An 85-year-old female is on metoprolol for atrial fibrillation, Bactrim for UTI prophylaxis, and felodipine for hypertension. This patient had a recent cerebrovascular accident (CVA) and the primary provider would like to start Coumadin on this patient. Which of the following would be the most appropriate starting dose?
    A. 2.5 mg daily
    B. 5 mg daily
    C. 2.5 mg twice daily
    D. 10 mg daily

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17. Which of the following medications is least likely to cause renal failure?
    A. Augmentin
    B. Gentamicin
    C. Losartan
    D. Celebrex

18. What is the most common cause of erythropoietin failure?
    A. B12 deficiency
    B. Iron deficiency
    C. Poor absorption in cachectic patients
    D. Liver disease

19. A 55-year-old male with a history of alcoholism is diagnosed with liver failure. Current laboratory testing reveals elevated ammonia levels. What is the most appropriate therapy to treat the elevated ammonia level?
    A. Propranolol
    B. Metoclopramide
    C. Lactulose
    D. Thiamine

20. What is the active metabolite of codeine?
    A. Fentanyl
    B. Oxycodone
    C. Morphine
    D. Methadone

21. What is the primary mechanism of action of Requip?
    A. Inhibits NMDA receptors
    B. Inhibition of GABA receptors
    C. Dopamine agonist
    D. Activate Mu receptors

22. Which of the following side effects would be least likely with Aricept?
    A. Nausea
    B. Constipation
    C. Weight loss
    D. Cognitive changes

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23. A 62-year-old Caucasian male presents to the hospital with NSTEMI. He became short of breath prior to being admitted to the hospital. Biomarkers for troponin and creatine kinase (CK) were noted to be elevated upon lab assessment. His labs are as follows:
    - Creatinine clearance: 71 mL/min
    - Sodium: 138 mEq/L
    - Potassium: 3.4 mEq/L
    - LFTs: within normal range
    - BP: 152/92 mmHg
    - Pulse: 79 bpm
    - TIMI Risk score: 4
    - Hemoglobin: 14.1 g/dL
    - Platelets: 297,000 per uL

Which of the following agents would be recommended upon discharge for this patient? (<u>select all that apply</u>)

A. Atorvastatin
B. Aspirin
C. Metoprolol
D. Lisinopril
E. Isosorbide mononitrate

Answer the following 2 questions based on the information presented.

A patient whose weight is 145 lbs and whose height is 5'3" is to receive a dose of Drug X. The dosing for Drug X is 1200 mg/m^2

24. What dose would be required for this patient? Round to the nearest 100.

25. What is this patient's BMI?

26. A 78-year-old female presented to the emergency department with increased coughing, shortness of breath, and a mild elevation in temperature. The patient has type 2 diabetes. She is diagnosed with community-acquired pneumonia and the decision for outpatient antibiotic therapy is made. What is the most appropriate empiric therapy?

A. Azithromycin
B. Ciprofloxacin
C. Doxycycline
D. Amoxicillin-clavulanate plus doxycycline

27. A 55-year-old male with a past medical history of GERD, hypertension, and alcoholism is diagnosed with a *C. difficile* infection. This is the first known episode. Which is the most appropriate therapy?
    A. Metronidazole
    B. Oral vancomycin
    C. Clindamycin
    D. Doxycycline

28. A 74-year-old female is currently taking the following medications: famotidine, diltiazem, amiodarone, and Tylenol. She has been experiencing edema of late. Which medication would be most likely to cause or worsen this symptom?
    A. Famotidine
    B. Diltiazem
    C. Amiodarone
    D. Tylenol

29. A 32-year-old female presents to your pharmacy with a bottle of St. John's wort. She is currently on birth control containing estrogen. What is the concern with taking these together?
    A. St. John's wort is an enzyme inhibitor and can reduce estrogen concentrations in the body
    B. St. John's wort is an enzyme inducer and can reduce estrogen concentrations in the body
    C. St. John's wort is an enzyme inhibitor and can increase estrogen concentrations in the body leading to increased risk of adverse effects
    D. St. John's wort is an enzyme inducer and can increase estrogen concentrations in the body leading to increased risk of adverse effects

30. Which of the following medication patches would it be appropriate to cut and still use?
    A. Fentanyl
    B. Exelon
    C. Lidoderm
    D. Scopolamine

31. Which antidepressant would be most beneficial in a patient who is trying to avoid the side effect of sexual dysfunction?
    A. Zoloft
    B. Lexapro
    C. Wellbutrin
    D. Pamelor

32. Which of the following medications can increase the risk for osteoporosis?
    A. Zofran
    B. Prednisone
    C. Tramadol
    D. Methotrexate

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33. The prescription for eye drops calls for 2 drops in the left eye twice daily. Given the following choices of package size, how many milliliters should be dispensed to get at least a month's supply while minimizing excess?
    A. 2.5 mL
    B. 5 mL
    C. 7.5 mL
    D. 10 mL

34. A 33-year-old male with a history of asthma was recently started on an albuterol inhaler. Which of the following would be an important education point?
    A. Rinse mouth with water and and spit following administration to prevent thrush
    B. This medication may interact with over the counter antitussives, like Robitussin
    C. This medication may cause an short-term increase in heart rate
    D. This medication should not be used in patients with a history GERD

35. Which of the following medications would be most useful in the treatment of hyperphosphatemia in chronic kidney disease?
    A. Carafate
    B. Sevelamer
    C. Calcitriol
    D. Miacalcin

36. Which of the following would be appropriate monitoring for adverse effects of hydroxychloroquine?
    A. Routine foot exams
    B. Routine eye exams
    C. CPK (especially with statin therapy)
    D. Neuropathy

37. Which of the following would be least appropriate for the management of acute pain?
    A. Ibuprofen
    B. Duragesic
    C. Oxycodone
    D. Tramadol

38. A 78-year-old male has a history of diabetic neuropathy and BPH. He presents with symptoms of worsening neuropathy. He has been treating it with over the counter Tylenol. Which medication would be LEAST appropriate to initiate?
    A. Duloxetine
    B. Amitriptyline
    C. Pregabalin
    D. Neurontin

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39. Which of the following medications is most likely to cause a GI bleed?
    A. Celebrex
    B. Ketorolac
    C. Acetaminophen
    D. Ultram

40. Capsaicin is a topical product used in the treatment of muscle pain. What is its primary mechanism of action?
    A. Acts as a counter irritant at site of application
    B. Depletes substance P
    C. Increases protein C at the site of action
    D. Inhibition of prostaglandin synthesis

41. A 77-year-old male with a history of multiple DVTs is currently receiving warfarin therapy. He is diagnosed with osteomyelitis and treatment with rifampin is initiated. What will likely happen to INR when rifampin is discontinued?
    A. INR will go up
    B. INR will go down
    C. INR will be unaffected
    D. Too little information to tell

42. A 57-year-old male has been initiated on Aldactone. What should be monitored?
    A. Liver function
    B. Potassium levels
    C. Albumin
    D. Pulses

43. What is the primary objective of HIPAA?
    A. Facilitate communication amongst healthcare professionals
    B. Protect the patient's right to keep their healthcare information private
    C. Minimize risk of frivolous lawsuits against medical professionals
    D. Improve cost containment measures with pharmaceutical manufacturers

44. A patient that is a poor CYP3A4 metabolizer would have what effect on the use of Plavix?
    A. Increased risk of bleed
    B. Increased risk of clot
    C. No change
    D. Increased risk at low doses and lower risk at higher doses

45. What class of medication would likely be used for esophageal varices associated with liver cirrhosis?
    A. ACE inhibitor
    B. Alpha blocker
    C. Calcium channel blocker
    D. Beta-blocker

46. Which of the following medications warrants monitoring for pulmonary fibrosis?
    A. Amiodarone
    B. Hydralazine
    C. Nabumetone
    D. Imodium

47. A 66-year-old female was recently started on Lamictal. What is an important educational point that this patient should look out for?
    A. The medication can cause discoloration of the urine
    B. Immediately report any sign of rash to provider
    C. The medication should not be taken with Tylenol
    D. The medication can cause muscle soreness

48. What is the antidote to heparin?
    A. Methylene blue
    B. Phytonadione
    C. Protein C
    D. Protamine sulfate

49. Which of the following medications works by antagonizing muscarinic receptors in the bladder?
    A. Ditropan
    B. Phenazopyridine
    C. Myrbetriq
    D. Flomax

Answer the following 2 questions based on the information below.

A 78-year-old white male with a history of atrial fibrillation, hypertension, GERD, and CHF is currently receiving metoprolol 25 mg twice daily, digoxin 0.25 mg daily, omeprazole 20 mg daily, Pepcid 40 mg at bedtime, and aspirin 81 mg daily. Recent labs reveal an elevation in creatinine of 1.8 mg/dL. 6 months ago, creatinine was 1.1 mg/dL. Other information: height = 6 feet 2 inches, weight 178 lbs., blood pressure = 128/78 mmHg, Pulse = 62 bpm, Respiration rate = 21 breaths per minute.

50. Which medication is this change in creatinine most likely to require dose adjustments?
    A. Metoprolol
    B. Pepcid
    C. Omeprazole
    D. Aspirin

51. Which of the following is NOT consistent with signs of digoxin toxicity?
    A. Nausea
    B. Vertical nystagmus
    C. Bradycardia
    D. Weight loss

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52. Rounding to the nearest whole number, what is the estimated creatinine clearance in this patient?

53. A 66-year-old diabetes patient has been recently diagnosed with congestive heart failure. Which diabetes medication would be least appropriate given this new diagnosis?

A. Lantus
B. Pioglitazone
C. Glucotrol
D. Victoza

54. A 24 kg 7-year-old male is experiencing a significant fever of 103 degrees Fahrenheit. What dose of Tylenol would you recommend initiating?

A. 100 mg
B. 300 mg
C. 500 mg
D. 700 mg

55. A new medication for Parkinson's disease is being investigated. Researchers are trying to identify the half-life of the drug. The elimination rate constant is 0.32 per hour. What is the approximate half-life?

A. Too little information to identify
B. 6 hours
C. 4 hours
D. 2 hours

56. Approximately how many grams of NaCl would need to be added to 330 mL of pure water to create an isotonic solution?

A. 3 grams
B. 4 grams
C. 5 grams
D. 6 grams

57. A 77-year-old female is currently on both Coumadin and aspirin with a history of MI and atrial fibrillation. Her neighbor is on a bunch of herbal supplements which she states really helps her feel better. Which of the following supplements would be the highest risk for her to try?

A. Glucosamine
B. Garlic
C. Thiamine
D. Vitamin C

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58. A 19-year-old female presents about 6 hours after ingesting a large, unknown amount of acetaminophen. She is extremely nauseated. What is the most appropriate initial course of action?
    A. Administer activated charcoal
    B. Give syrup of ipecac to induce vomiting
    C. Check an acetaminophen level
    D. Administer N-acetylcysteine

59. Which of the following is not true regarding the use of long acting nitrates?
    A. They can be given with or without food
    B. They are not used for acute relief of angina
    C. Monitoring blood pressure is warranted while on therapy
    D. Can be used safely with with PDE-5 inhibitors

Answer the following two questions based on the case:

A 45-year-old female with a history of epilepsy, hypertension, and diabetes is taking the following medications: Dilantin 200 mg twice daily, lisinopril 10 mg daily, metformin 500 mg twice daily, and glipizide 5 mg daily.

She was prescribed fluconazole 100 mg twice daily for 14 days about 5 days ago. She has been feeling weak, nauseated, slurring speech, and having difficulty with her gait.

Current labs reveal: CrCl = 78 mL/min, sodium 138 mEq/L, potassium 4.4 mEq/L, hemoglobin = 14.6 g/dL, A1C = 7.7%, blood glucose = 99 mg/dL, and Dilantin level = 28 mcg/mL.

60. What is the likely cause?
    A. Side effects from fluconazole
    B. Hypoglycemia
    C. Drug interaction
    D. Anemia

61. In the patient above, chronic Dilantin use can contribute to which deficiency?
    A. Folate
    B. B12
    C. Vitamin C
    D. Vitamin D

62. A 66-year-old male with a history of congestive heart failure, diabetes, rheumatoid arthritis, and seizures is started on Mobic. Which disease state is this most likely to worsen?
    A. Congestive heart failure
    B. Diabetes
    C. Rheumatoid arthritis
    D. Seizures

63. Approximately how many kcals are in 30 grams of lipids?
    A. 12 kcals
    B. 27 kcals
    C. 120 kcals
    D. 270 kcals

64. Which of the following cases would not require initiation of HIV treatment?
    A. CD4 count less than 300
    B. Pregnancy
    C. Patient diagnosed with PCP
    D. All of the above are cases where HIV treatment should be initiated

65. Which of the following is considered a thiazide-like diuretic often used to augment fluid loss in the treatment of congestive heart failure?
    A. Bumetanide
    B. Triamterene
    C. Metolazone
    D. Ethacrynic acid

66. What is the half-life of a medication if the concentration at 8 AM is 16 mg/L and 12 hours later at 8 PM the concentration is at 2 mg/L?
    A. 1 hour
    B. 2 hours
    C. 3 hours
    D. 4 hours

67. Who may be eligible for PrEP therapy?
    A. Person who has had vaginal or anal sex (with inconsistent condom usage) in the last 6 months with a partner of unknown HIV status
    B. Person who uses injectable drugs (illicit substances) and shares injection equipment
    C. Person who has been diagnosed with gonorrhea or syphilis in the past 6 months
    D. All the above

68. Which of the following is a common complication with the use of paclitaxel?
    A. Retinopathy
    B. Neuropathy
    C. Rash
    D. Cystitis

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69. A primary provider is asking you for your opinion on which would be the most appropriate antihypertensive in a patient who has frequent gout flares. Which would be least appropriate?
    A. Metoprolol
    B. Lisinopril
    C. Chlorthalidone
    D. Clonidine

70. A 45-year-old male presents to the clinic with an inflamed and extremely painful left big toe. Recent labs reveal: Creatinine = 1.1 mg/dL, BUN = 19 mg/dL, hemoglobin =15 g/dL, platelets = 324,000/uL, uric acid = 13 mg/dL, potassium = 4.3 mEq/L, and sodium = 136 mEq/L. What medication would you use to treat this patient's pain?
    A. Allopurinol
    B. Indomethacin
    C. Tylenol
    D. Methotrexate

71. Which of the following medications should not be used in a patient who has a stated sulfa allergy?
    A. Unasyn
    B. Levaquin
    C. Septra
    D. Doxycycline

72. What is the mechanism of action of Xarelto?
    A. Inhibits Factor Xa
    B. Bind to ADP receptors on platelets
    C. Direct thrombin inhibitor
    D. None of the above

73. Which of the following medications would most likely increase the risk of deep vein thrombosis (DVT)?
    A. Lopressor
    B. Premarin
    C. Diclofenac
    D. Probenecid

74. Questran causes drug interactions primarily via what mechanism?
    A. CYP3A4 inhibition
    B. P-glycoprotein inhibition
    C. Blocking absorption in the gut
    D. Reducing elimination via the kidney

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75. Which of the following statins can be considered high-intensity lipid lowering agents? Select all that apply.
    A. Atorvastatin
    B. Simvastatin
    C. Pravastatin
    D. Rosuvastatin

76. Which of the following medications is used to stimulate the production of white blood cells following chemotherapy?
    A. Aranesp
    B. Erythropoietin
    C. Remicade
    D. Neupogen

77. According to the DEA, which medication has the lowest potential for abuse?
    A. Ativan
    B. Methadone
    C. Ritalin
    D. Kadian

78. Which of the following is LEAST likely to be a symptom of opioid withdrawal?
    A. Anxiety
    B. Nausea
    C. Constipation
    D. Sweating

Answer the following three questions based on the following case:

A 67-year-old African American male has a history of hypertension and bipolar disorder. He is currently taking hydralazine, hydrochlorothiazide, loratadine and lithium. He has been feeling a little off lately.

Labs/vitals reveal: Creatinine = 1.1 mg/dL, potassium = 4.0 mEq/L, sodium = 142 mEq/L, TSH = 17.4 mIU/mL, lithium 0.9 mEq/L, BP = 156/78 mmHg

79. What medication is most concerning in regards to the lab work and new symptoms.
    A. Hydralazine
    B. Lithium
    C. Hydrochlorothiazide
    D. Loratadine

80. Of his other medications, which medication would be most likely to cause lithium levels to rise?
    A. Hydralazine
    B. Loratadine
    C. Hydrochlorothiazide
    D. None of the above would interact

81. In the above case, which blood pressure medication would be most appropriate to replace hydralazine?
A. Lisinopril
B. Amlodipine
C. Losartan
D. Aliskiren

82. Which of the following statins is least likely to be involved in a drug interaction?
A. Atorvastatin
B. Simvastatin
C. Pravastatin
D. Rosuvastatin

83. Which of the following medications is used to treat hyperkalemia?
A. Sodium polystyrene sulfonate
B. Vitamin K
C. PhosLo
D. Calcitriol

A 25-year-old patient presents to your pharmacy stating she has a head cold and that she has been using Afrin for about 2 days since the symptoms started. She is not experiencing any benefit for her nasal congestion. She has no fever and she rates the pain at 2 on a scale of 1-10.

84. You should:
A. Recommend an oral nasal decongestant
B. Recommend a follow up with her primary physician
C. Recommend trying it for at least 5-10 days before switching if no relief in that timeframe, then see her primary physician
D. Recommend a mucolytic agent to take with Afrin for up to 10 days

85. Which of the following is least likely to alleviate acute respiratory symptoms in COPD?
A. Albuterol
B. Xopenex
C. Flovent
D. Ipratropium

86. Which of the following is false regarding Lidoderm patches?
A. Should be removed every 24 hours
B. Can be cut
C. You can use more than one patch at a time
D. They are meant to be placed at the location of the pain

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87. A 2-year-old male patient is diagnosed with acute otitis media – what is the recommended first line treatment?
    A. Levofloxacin
    B. Amoxicillin
    C. Bactrim
    D. Keflex

88. A 33-year-old female has a history of hypertension, GERD, and depression. Current medications include: omeprazole, lisinopril, TUMS (as-needed), and Zoloft. She just found out that she is pregnant. Which of the following medications should be discontinued immediately?
    A. Lisinopril
    B. Omeprazole
    C. Tums
    D. Zoloft

89. Which of the following medications works by selectively inhibiting serotonin reuptake inhibitors in the treatment of depression?
    A. Effexor
    B. Cymbalta
    C. Luvox
    D. Elavil

90. A patient presents with symptoms of edema in his legs. Medications include: amlodipine, lisinopril, ibuprofen, and gabapentin. Which medication would LEAST likely be the cause of the peripheral edema?
    A. Amlodipine
    B. Lisinopril
    C. Ibuprofen
    D. Gabapentin

Answer the following two questions based on the scenario below.

An exhausted mother is with her 8 month old child. She has been crying and just got back from the physician's office in which they told her to use OTC pain meds as she is just teething. The 8 month old has no known allergies and is 16 lbs.

91. What would you recommend?
    A. Ibuprofen 200 mg every 6 hours as needed
    B. Ibuprofen 50 mg every 6 hours as needed
    C. Ibuprofen 20 mg every 6 hours as needed
    D. Ibuprofen 100 mg every 6 hours as needed

92. With her stuffy nose, she is having an occasional cough. Her mother would like an option to help with this. What is the best recommendation?
    A. Pseudoephedrine
    B. Diphenhydramine
    C. Dextromethorphan
    D. Cough Drops
    E. None of the above

93. A 55-year-old male is diagnosed with Lyme's disease. What is the most appropriate initial treatment?
    A. Valtrex
    B. Vancomycin
    C. Doxycycline
    D. Clindamycin

94. Which bacteria is associated with the highest incidence of causing UTIs?
    A. S. pneumoniae
    B. S. aureus
    C. P. aeruginosa
    D. E. coli

95. A 44-year-old male is on the following medications: hydrochlorothiazide, tramadol, quetiapine, and Prozac. He has had a weight gain of 20 pounds in the last 6 months. Which medication is the most likely cause?
    A. Hydrochlorothiazide
    B. Tramadol
    C. Quetiapine
    D. Prozac

96. Which of the following immunizations is recommended annually for patients greater than 65? Select all that apply.
    A. Pneumococcal
    B. Influenza
    C. Varicella
    D. Prevnar

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97. A fast metabolizer via CYP3A4 would expect what effect on concentrations of erythromycin versus the normal population?
    A. Higher
    B. Lower
    C. No change
    D. None of the above

98. What is the primary mechanism of action of famotidine?
    A. Blocks Histamine type 1 receptors
    B. Blocks proton pumps in the GI tract
    C. Coats the lining of the stomach to produce its antacid effects
    D. None of the above

99. Which of the following is not a typical side effect of corticosteroids?
    A. Hyperglycemia
    B. GI upset
    C. Liver toxicity
    D. Insomnia

100. Which of the following is NOT a live vaccine?
    A. Varicella
    B. FluMist
    C. Tdap
    D. MMR

Answer the following four questions based on the case below:

A 61-year-old female has a history of osteoporosis, GI bleeding, knee osteoarthritis, gout, and hypertension. She presents to your pharmacy with worsening pain in her left knee. She hasn't taken anything to treat her pain at this point because she is scared that anything over the counter she takes will interact with her medications.

Her current medications include Fosamax, calcium with vitamin D supplement, losartan, metoprolol, allopurinol, prednisone, and hydrochlorothiazide.

101. What would be the most appropriate and effective long-term treatment for her osteoarthritis?
    A. Ketorolac
    B. Tramadol
    C. Topical diclofenac
    D. Acetaminophen

102. Which medication in her list has the greatest potential to elevate uric acid?
    A. Prednisone
    B. Hydrochlorothiazide
    C. Losartan
    D. Fosamax

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103. Out of the following medications, which is most likely to cause increases in calcium levels?
    A. Hydrochlorothiazide
    B. Losartan
    C. Prednisone
    D. Tylenol

104. What is the primary mechanism of action of Fosamax?
    A. Stimulates osteoblast activity
    B. Inhibits osteoblast activity
    C. Increases production of endogenous vitaminD
    D. Inhibits osteoclast activity

105. Which one of the following would be most appropriate in a patient reporting symptoms of depression and neuropathy?
    A. Zoloft
    B. Elavil
    C. Duloxetine
    D. Trazodone

106. Which of the following is the most common side effect of interferon beta-1a.
    A. Loose stools
    B. Flu-like symptoms
    C. Leukopenia
    D. Dry mouth

107. KL is a 47-year-old female with a history of smoking and obesity. She presents to the emergency department with an acute ischemic stroke. She is in hypertensive crisis, BP 201/115 mmHg, but otherwise eligible for alteplase therapy. Which of the following agents would be most appropriate to initiate to safely lower her blood pressure < 185/110 mmHg?
    A. Nitroglycerin
    B. Labetalol
    C. Hydralazine
    D. Nitroprusside

108. A 21-year-old male presents to the emergency department with incredibly painful head and neck pain. Upon assessment by the primary provider, it is determined that he likely has bacterial meningitis. Which of the following would be the agent of choice to initiate (in addition to vancomycin)?
    A. Clindamycin
    B. Levofloxacin
    C. Doxycycline
    D. Ceftriaxone

A 26-year-old female presents to your pharmacy questioning which medication she can take for a headache. In the discussion with her, she reveals that she has just found out that she is pregnant. Her current medications include Prozac, famotidine, Vitamin B6, and minocycline (for acne).

109. Which medication would you recommend that she stop taking today?
    A. Prozac
    B. Famotidine
    C. Vitamin B6
    D. Minocycline

110. In pregnancy, what is vitamin B6 commonly used to treat?
    A. Heartburn
    B. Constipation
    C. Nausea and vomiting
    D. Minimize risk of hemorrhoids

Answer the following three questions regarding the following case:

A 55-year-old male with a history of atrial fibrillation, CHF, is diagnosed with tuberculosis. His primary provider places him on rifampin and isoniazid, ethambutol, and pyrazinamide. His other medications include Coumadin, Lasix, lisinopril, and metoprolol.

111. Given his isoniazid use, which black box warning exists for this medication?
    A. Kidney failure
    B. Hepatitis
    C. Thrombocytopenia
    D. Increased risk of pancreatic cancer

112. Which electrolyte change associated with Lasix would be incorrect?
    A. Hypomagnesemia
    B. Hypokalemia
    C. Hyponatremia
    D. All of the above can result due to Lasix use

113. When this patient has their rifampin discontinued, what will happen to Coumadin concentrations and INR?
    A. INR will go up and Coumadin concentrations will go up
    B. INR will go up and Coumadin concentrations will go down
    C. INR will go down and Coumadin concentrations will go down
    D. No change in either

114. Which of the following medications used for HIV has a warning for lactic acidosis and severe hepatomegaly?
    A. Efavirenz
    B. Abacavir
    C. Lopinavir
    D. Ritonavir

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Answer the following three questions based on the case:

A 69-year-old male recently fell at home and presents to the ER with significant back pain. He states that he took a couple of Tylenol before he came, but it hasn't done a thing to help his pain. Past medical history includes hypertension, mild CHF, and epilepsy. Current medications include Keppra, Dilantin, clonidine, and Zestril.

115. What would be the most appropriate recommendation to treat his acute pain?
    A. Fentanyl patch
    B. Oxycontin
    C. Tramadol
    D. Morphine

116. If we used an NSAID in the above case, which of the following should be limited to use no longer than 5 days?
    A. Ketorolac
    B. Ibuprofen
    C. Nabumetone
    D. Piroxicam

117. Which of the following vitals would be important in assessing fall risk in this patient?
    A. Blood pressure
    B. Dilantin Level
    C. Timing and location of fall
    D. All of the above

118. A 66-year-old female is 165 cm tall, weighs 198 pounds, and is enrolled in an investigation trial for a new cancer medication. The daily dose is 25 mg/kg and is dosed by ideal body weight. What dose should she be given?
    A. 2,225 mg
    B. 1,125 mg
    C. 1,425 mg
    D. 1,550 mg

119. How many vials of 80 mg/2 mL (2 mL vials) tobramycin would be required if a provider asks for a 6 mg/kg dose for a female patient weighing 189 lbs?

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120. A patient presents a prescription for an infant. The order calls for 15 grams of 0.3% hydrocortisone cream. The pharmacy has a stock 1% hydrocortisone cream and cold cream. How much hydrocortisone 1% cream is needed to make 15 grams? Round to the nearest tenth.

121. A cardiac patient is prescribed lidocaine at a dose of 3 mg/min. The pharmacy has in stock a 250 mL bag of 0.8% lidocaine solution. Approximately how many hours will it take for this bag to be used up, rounded up OR down to the nearest hour?

Answer the following three questions based on the following case:

A 69-year-old female patient has a history of kidney disease, DVT, hypertension, neuropathy, and back spasms, currently receiving the following medications: Coumadin, metoprolol, gabapentin, cyclobenzaprine, and Cymbalta. She presents to the pharmacy with her recent lab values as well:
Potassium = 4.5 mEq/L
Sodium = 138 mEq/L
Chloride = 106 mEq/L
Serum Creatinine = 1.9 mg/dL
Weight = 156 lbs
INR = 2.1
Hemoglobin = 14.1 g/dL

122. Which medication is primarily eliminated via the kidney?
    A. Coumadin
    B. Gabapentin
    C. Cyclobenzaprine
    D. Cymbalta

123. Gabapentin requires a transporter to cross the GI tract. As the dose increases and this transporter gets saturated, what can potentially happen?
    A. As the dose increases, the neuropathic pain could increase
    B. As the dose increases, the physiological response may be proportionally less
    C. As the dose increases, total serum concentrations can go down
    D. As the dose increases, the serum concentrations go disproportionally higher

124. What is the mechanism of action of cyclobenzaprine?
    A. Reduces tonic somatic motor activity
    B. Serotonin and Norepinephrine Reuptake Inhibitor
    C. Enhances inhibitory effect of GABA
    D. Blocks sodium channels, inhibiting depolarization

125. JT's primary care provider believes he has Addison's disease. He hasn't been told much about his condition, and he wishes to know what the usual treatment of this disease is. What is the best response?
    A. Spironolactone
    B. Hydrocortisone
    C. Avoid all corticosteroids as they can cause medication-induced adrenal insufficiency
    D. Propranolol
    E. Phenytoin for seizure prophylaxis

126. A patient presents to your pharmacy with a new prescription for Zyban to help with smoking cessation. You note that she has a history of high blood pressure, smoking, MS, seizures, and anxiety. Which disease state could be significantly exacerbated by this order?
    A. MS
    B. High blood pressure
    C. Anxiety
    D. Seizures

127. A 44-year-old male was recently diagnosed with mild non-purulent cellulitis. Which of the following is the most appropriate empiric therapy?
    A. Vancomycin
    B. Dicloxacillin
    C. Ceftriaxone
    D. Zosyn

128. Which of the following ethnic groups is potentially at a higher risk of SJS from Tegretol?
    A. Asians
    B. White females
    C. Blacks
    D. Hispanics

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129. Which of the following is not true in regards to changes in pharmacokinetics in the general elderly population?
    A. Decreased volume of distribution for lipophilic medications
    B. Decreased kidney function
    C. Age generally does not affect conjugation (phase 2 reactions) via the liver
    D. Decreases in albumin can affect drugs like Dilantin

130. Which of the following is NOT an important side effect to monitor for with amphotericin B?
    A. Infusion reaction
    B. Nephrotoxicity
    C. Neurotoxicity
    D. Chills

131. What is a potential disadvantage of DOACs compared to warfarin? (Select all that apply)
    A. Direct cost
    B. Diet changes can impact blood concentrations
    C. More drug interactions
    D. Twice daily dosing for some
    E. Inability to assess for adherence through blood levels

Answer the following two questions based on the case:

A 41-year-old female has a history of hypertension, smoking, and asthma. Current medications include: Ortho Tri Cyclen for birth control, nifedipine, varenicline, nicotine gum as needed, and albuterol as needed. She has been complaining of abnormal dreams of late.

132. Which medication would you likely suspect to be contributing to these symptoms?
    A. Ortho Tri Cyclen
    B. Nifedipine
    C. Varenicline
    D. Nicotine

133. Which of the following would put her at increased risk of a blood clot? Select all that apply
    A. Age
    B. Ortho Tri Cyclen
    C. Smoking
    D. Asthma

134. Which of the following is not true in regards to the use of vancomycin?
    A. Oral and parenteral bioavailability differences are negligible
    B. Patients should be monitored for vancomycin flushing syndrome
    C. Kidney function should be monitored
    D. Trough concentrations are often monitored to direct therapy

135. Match the medications to the correct site of action in the nephron.

1. Chlorthalidone
2. Bumetanide
3. Spironolactone
4. Acetazolamide

A. Ascending Loop of Henle
B. Distal convoluted tubule
C. Collecting duct
D. Proximal convoluted tubule

136. Which of the following NSAIDs is available as a topical formulation?

A. Indomethacin
B. Diclofenac
C. Meloxicam
D. Sulindac

137. A patient is switching from Dilantin (total daily dose of 300 mg) daily extended release capsules to the liquid suspension (total daily dose of 300 mg). Which of the following would be an incorrect educational point on the use of Dilantin?

A. It is critical for patients to not miss doses
B. Seizure risk increases even with normal total Dilantin levels in with low albumin
C. Chronic Dilantin can contribute to vitamin D deficiency
D. Signs of toxicity include GI upset, Ataxia, slurred speech, and lethargy

138. Which of the following is not an inhibitor of CYP3A4?

A. Grapefruit juice
B. Erythromycin
C. Diflucan
D. St. John's Wort

139. What is the mechanism of action for Comtan?

A. COMT inhibitor
B. MAOI
C. Dopamine Agonist
D. Acetylcholinesterase Inhibitor

140. Which of the following medications is indicated for diabetic gastroparesis?

A. Carafate
B. Reglan
C. Compazine
D. Omeprazole

141. Which of the following would likely exacerbate IBS with predominant diarrhea?

A. Dicyclomine
B. Lomotil
C. Elavil
D. Zoloft

142. A patient presents to the pharmacy not having taken his medications for two days as he forgot them when he left for vacation. Which one would likely be the highest risk to go without for 2 days? Tylenol 500 mg twice daily, metoprolol 100 mg BID, Xalatan 1 gtt OU HS, Lipitor 40 mg daily.
    A. Metoprolol
    B. Tylenol
    C. Xalatan
    D. Lipitor

143. Which of the following would be indicated in the treatment of Graves' disease?
    A. Methimazole
    B. Prednisone
    C. Hydroxyzine
    D. Prochlorperazine

144. What is a methacholine challenge used to help diagnose?
    A. Parkinson's disease
    B. Asthma
    C. Multiple sclerosis
    D. Diabetes

145. Which of the following antibiotics has poor lung penetration and would greatly increase the risk of rhabdomyolysis?
    A. Clindamycin
    B. Daptomycin
    C. Bactrim
    D. Gentamicin

146. For which of the following patients would a pneumococcal vaccine not need to be given?
    A. 53-year-old male with only a history of osteoarthritis
    B. 35-year-old female with moderate asthma
    C. 63-year-old male with COPD
    D. 69-year-old female with no comorbidities

147. Which of the following study designs has the lowest statistical evidence behind it?
    A. Cohort study
    B. Case control study
    C. Randomized controlled trials
    D. Case study

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148. The MedWatch program collects data from which of the following phase(s) of clinical trials?
A. Phase 1
B. Phase 2
C. Phase 3
D. Phase 4

149. A 68-year-old female with a history of epilepsy and diabetes is currently receiving the following: phenytoin, carbamazepine, pioglitazone, and metformin. Recent labs revealed hyponatremia. Which medication is the most likely cause?
A. Phenytoin
B. Carbamazepine
C. Pioglitazone
D. Metformin

150. A 65-year-old female presents with symptoms of weakness on one side and a noted facial droop. Symptoms started about 2 hours ago. The suspected diagnosis is a CVA. Currently, she is receiving warfarin and the INR was 2.3 upon checking. Is tPA appropriate?
A. No, because symptoms started more than 90 minutes ago.
B. No, because INR is currently 2.3
C. Yes, give tPA now
D. Yes, but give tPA when INR falls to less than 1.7

151. When a p-value is calculated in a clinical study, what is being determined?
A. Probability of making a Type 1 error
B. Probability of making a Type 2 error
C. Probability that the difference observed is clinically significant
D. Probability that the study is powered to detect statistical differences

152. A 46-year-old female is assessed with right knee pain. She was instructed a couple of weeks ago to try capsaicin cream for mild to moderate pain. Past medical history includes GI bleed and chronic kidney disease. She has tried it a few times when her knee was aching but reports that it has not been effective. The patient is asking for the pharmacist's recommendations.
A. Keep using the capsaicin, but use at least three times daily for at least a few weeks
B. Self treatment is not recommended at this point
C. Recommend ibuprofen
D. Recommend glucosamine/chondroitin

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153. Choosing only patients with severely high blood pressure for a study on hypertension medication that will help you prove statistical significance is an example of:

A. Observational bias
B. Selection bias
C. Recall bias
D. Interviewer bias

154. Variables X and Y have a correlation coefficient of -0.0024. What does this mean?

A. There is very little correlation
B. As X increases, Y tends to increase as well
C. Y is a dependent variable
D. An error was made in calculation

155. What is the distribution of water in the extracellular space?

A. 25/75 plasma/interstitial
B. 50/50 plasma/interstitial
C. 60/40 plasma/interstitial
D. None of the above

156. Which antibiotic can be used to promote GI motility?

A. Levofloxacin
B. Moxifloxacin
C. Clarithromycin
D. Erythromycin

157. A 65-year-old patient with diabetes presents to the ED with symptoms of excessive thirst and lethargy. The patient appears confused. His spouse reports that he has been like this for the last few hours. She also reports that he hasn't been very good about taking his insulin recently and has also been "into the sweets" as they have been celebrating with family.

Labs:

- Blood glucose = 555 mg/dL
- Sodium = 134 mEq/L
- Potassium = 3.0 mEq/L
- Creatinine = 1.6 mg/dL
- pH = 7.23

Which of the following actions would be most appropriate to do first?

A. Initiate insulin
B. Initiate IV potassium replacement
C. Initiate oral hydration
D. Initiate sodium bicarbonate to raise pH

158. A 55-year-old male has been hospitalized for about 7 days following a recent hip surgery. He starts to develop increased coughing and a temperature of 38.2 degrees Celsius and is diagnosed with pneumonia. What is the most appropriate empiric pneumonia therapy?
A. Cefepime and gentamicin
B. Ertapenem
C. Piperacillin/tazobactam
D. Cefepime and linezolid

159. A 36-year-old male present with intractable hiccups. What medication is indicated for the treatment of this?
A. Lorazepam
B. Levetiracetam
C. Propranolol
D. Chlorpromazine

160. Which of the following drugs is paired with an incorrect target/site of action?
A. Macrolide: 50S ribosomal subunit
B. Tetracycline: 30S ribosomal subunit
C. Beta-lactams: cell wall synthesis
D. Fluoroquinolones: DNA topoisomerase I & III

161. In oncology, which one of the following medication regimens is least likely to cause chemotherapy induced nausea and vomiting?
A. Dacarbazine
B. Doxorubicin (< 60 mg/m2)
C. Cisplatin
D. Vincristine

162. A mother presents to the pharmacy with questions on different pain medications for her 8 month old infant. She believes her baby is teething and would like something to help with the pain. She will not use Tylenol as she is concerned that it will cause liver toxicity in her baby. Which of the following would be the best alternative?
A. Aspirin
B. Ibuprofen
C. Tramadol
D. None of the above

163. A patient with end stage COPD presents to your pharmacy with a sore throat and has just recently been to his primary care provider and has a prescription for Nystatin swish and swallow. His current medications include: Symbicort, DuoNeb, Spiriva, and Daliresp. Which medication would you like to reeducate this patient on first?
A. Symbicort
B. DuoNeb
C. Spiriva
D. Daliresp

Answer the following 3 questions based on the case below:

A 45-year-old male has a history of hyperlipidemia, gout, hypertension, and rheumatoid arthritis. His current medications include Lipitor, niacin, lisinopril, allopurinol, and methotrexate.

164. Which medication is most likely to exacerbate his gout?
    A. Lipitor
    B. Niacin
    C. Methotrexate
    D. Lisinopril

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165. What is the mechanism of action for allopurinol?
    A. Inhibits xanthine oxidase
    B. Increases renal excretion of uric acid
    C. Inhibits beta-tubulin polymerization in microtubules
    D. Reduces inflammation via COX inhibition

166. Which of the following is a notable drug interaction that can occur when Lipitor and niacin are taken together?
    A. Exacerbation of niacin-induced flushing
    B. Muscle pain
    C. Increase in triglycerides
    D. Severe diarrhea

167. With respect to clinical trials, which of the following is true?
    A. As sample size increases, power will increase as well
    B. Bias most often increases the risk of type 2 error
    C. Intention-to-treat analysis considers all subjects who received at least 1 dose of the test intervention
    D. P-value threshold of 0.05 is generally used to determine clinical significance

168. Which of the following would not be an anticipated effect of epinephrine?
    A. Increased heart rate
    B. Anxiety
    C. Headache
    D. Hypotension

169. What is the mechanism of action of cyclosporine used in organ transplantation?
    A. Inhibits calcineurin
    B. Inhibits inosine 5’-monophosphate dehydrogenase
    C. Inhibits T-lymphocyte activation by binding to FKBP-12
    D. Binds to intracellular receptors and affect gene expression to reduce inflammation

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170. An over the counter medication (solution) is 0.7% active ingredient. How many mg would be in a 30 cc bottle? Round to the nearest whole mg.

171. What is the primary mechanism of action of olanzapine in the treatment of schizophrenia?
    A. Serotonin receptor agonist
    B. Alpha receptor agonist
    C. Norepinephrine reuptake inhibitor
    D. Dopamine receptor antagonist

172. A 48-year-old male presents with an acute exacerbation of his rheumatoid arthritis. He is currently on methotrexate 7.5 mg weekly. Which of the following would be most appropriate to acutely relieve the pain symptoms?
    A. Increase methotrexate
    B. Add Tylenol
    C. Add ibuprofen
    D. Switch to hydroxychloroquine

Answer the following two questions with this information:

A 134 kg patient with chronic kidney disease has an order written for Aranesp 0.45 mcg/kg once weekly. The concentration in stock at the pharmacy is 25 mcg/0.42 mL.

173. How many mLs will be required to fill this order? Round to the nearest hundredth's place.

174. Which of the following is a boxed warning for Aranesp?
    A. Increased risk of severe hypercalcemia
    B. Increased risk of severe hypocalcemia
    C. Increased risk of serious cardiovascular events
    D. Hypertensive crisis

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175. Which one of the following medications could be used in atrial fibrillation and hypertension?
A. Terazosin
B. Calan
C. Amlodipine
D. Lisinopril

176. Which of the following would be most likely to interact with Coumadin and raise INR?
A. Metronidazole
B. Carbamazepine
C. St. John's Wort
D. Rifampin

177. Which of the following medications has the potential to cause both hyponatremia and hyperkalemia?
A. Enalapril
B. Hydrochlorothiazide
C. Metoprolol
D. Aldactone

178. What is the mechanism of action of memantine?
A. Dopamine agonist
B. NMDA receptor antagonist
C. Acetylcholinesterase inhibitor
D. Neuraminidase Inhibitor

179. Which of the following is not an adverse effect of Vyvanse?
A. Circulation problems
B. Increased oral secretions
C. Hypertension
D. Growth suppression

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Answer the following three questions based on the information below:

A 49-year-old female presents to the pharmacy for a comprehensive medication review. She is currently on the following medications: doxepin, Senna-S, oxycodone, diltiazem, lisinopril, saliva substitute, artificial tears, Lumigan, and Restasis. Her current diagnoses include insomnia, constipation, pain, hypertension, xerostomia, and keratoconjunctivitis sicca.

180. She has a very busy schedule and would like to do all her eye drops at one time. What is the best response?
    A. Artificial tears, Lumigan, and Restasis should all be ok to be given consecutively
    B. She should wait at least 60 seconds between eye drops
    C. She should wait 5 minutes between eye drops
    D. She should wait at least 10-15 minutes between eye drops

181. Which of the following medications is likely to exacerbate her xerostomia and keratoconjunctivitis sicca?
    A. Oxycodone
    B. Diltiazem
    C. Restasis
    D. Doxepin

182. What is the medication class of Lumigan?
    A. Alpha-2 receptor agonist
    B. Prostaglandin analog
    C. Beta-blocker
    D. Corticosteroid

183. A 64-year-old female is receiving Oxycontin 80 mg twice daily for the management of back pain. She has been taking this medication for years, but has had some difficulty swallowing recently. The provider would like to switch Oxycontin to morphine oral solution. What would be the most appropriate equivalent conversion from Oxycontin 80 mg twice daily?
    A. 240 mg oral morphine per day
    B. 420 mg oral morphine per day
    C. 120 mg oral morphine per day
    D. 107 mg oral morphine per day

184. Which of the following is not an advantage of using Buspar over a benzodiazepine to treat anxiety?
    A. Buspar works relatively quickly
    B. Buspar has lower risk of abuse/addiction
    C. Buspar is better tolerated in the elderly
    D. Buspar is not a controlled substance

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A concerned mother walks into the pharmacy and would like to pick up her daughter's prescription for oseltamivir. Upon questioning, you find out that her four-year-old daughter was recently diagnosed with influenza. Her daughter's weight is 45 lbs. Her daughter really struggles with breathing and the mother is having a difficult time with anxiety as well. The recommended dosing is as follows:

Oseltamivir Prophylaxis

- < 15 kg = 30 mg once daily
- 15.1-23 kg = 45 mg once daily
- 23.1-40 kg = 60 mg once daily
- ≥ 40.1 kg = 75 mg once daily

Oseltamivir Treatment

- < 15 kg = 30 mg BID
- 15.1-23 kg = 45 mg BID
- 23.1-40 kg = 60 mg BID
- ≥ 40.1 kg = 75 mg BID

185. Given the information above, calculate the appropriate dose for the daughter's oseltamivir.

186. Regarding the use of oseltamivir, which of the following is false?

A. Prophylaxis typically lasts 7-10 days
B. Treatment usually lasts 5 days
C. Oseltamivir inhibits neuraminidase as its primary mechanism of action
D. Oseltamivir requires dose adjustments for hepatic impairment but are not for renal impairment

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Answer the following two questions based on the following scenario:

An elderly gentleman has recently had cataracts removed from his eyes and still has complaints of visual problems. His current medication list includes:

- Terazosin 2 mg at bedtime
- Methotrexate 15 mg once weekly
- Prednisone 5 mg daily
- Ramipril 10 mg daily
- Metoprolol tartrate 25 mg BID
- Aspirin 81 mg daily
- Etanercept 50 mg weekly

187. Which medication is most likely responsible for contributing to his cataracts?

A. Prednisone
B. Ramipril
C. Methotrexate
D. Terazosin

188. Which of the following is the appropriate route of delivery for etanercept?

A. Oral
B. Intra-articular
C. IV infusion
D. Subcutaneous

Answer the following two questions based on the information below.

A physician orders a 3mcg/kg/min drip of Drug A. This drug is typically put into a 250 ml bag of D5W. The patient's weight is 135 pounds.

189. How much Drug A in mg will this patient receive in 30 minutes? Round to the nearest tenth.

190. If the infusion ran continuously for 48 hours at the rate of 3 mcg/kg/min, how many bags of D5W, each containing 200 mg of Drug A, would the patient need?

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191. Which of the following is false regarding the Cockcroft-Gault equation?
    A. A rise in serum creatinine will estimate a decrease in creatinine clearance
    B. A higher lean body weight will estimate a lower overall creatinine clearance
    C. Blood urea nitrogen does not factor into this equation
    D. As age increases, estimated creatinine clearance will decrease

Answer the following 2 questions based on the scenario below.

With an increase in shortness of breath, JS presents to the emergency department. He has noticed that swelling around his ankles has increased some over the last couple of days. He also reports frequent OTC naproxen use because of a sore back.

His other diagnoses include COPD, GERD, history of myocardial infarction, heart failure, and atrial fibrillation.

192. Which of the following monitoring parameters would be utilized to assess this patient for cardiac conduction abnormalities?
    A. BNP
    B. Chest X-Ray
    C. Troponin
    D. EKG

Current labs reveal:
- SpO2 = 92%
- Pulse = 98 BPM
- BP = 152/88 mmHg
- Respiratory rate = 36 resp/min
- BNP = 986 pg/mL

193. Which of the following agents would be most critical to administer first?
    A. Nitroprusside
    B. Digoxin
    C. Labetalol
    D. Torsemide

Answer the following two questions based on the following scenario:

The ambulance arrives at the emergency department with a 35-year-old male who was just in a car accident. Because of the injuries to his chest, he is having an incredibly difficult time breathing and the provider would like to intubate him.

194. Which of the following agents should be selected to ensure the most rapid intubation?
    A. Dantrolene
    B. Cisatracurium
    C. Succinylcholine
    D. Intrathecal baclofen

195. It is determined that the patient will need to be placed on a longer acting agent, pancuronium. Which of the following agents would be utilized as a reversal agent for pancuronium?
    A. Pilocarpine
    B. Succinylcholine
    C. Fluorouracil
    D. Neostigmine

196. Which of the following antihypertensive agents are considered safe for use during pregnancy?
    A. Methyldopa
    B. Labetalol
    C. Nifedipine
    D. All of the above

Answer the following 3 questions based on the scenario:

Jane is a 34-year-old female who has been a regular patient of yours. She presents very excitedly as she recently found out she is pregnant after years of trying. She has frequent headaches, about 4-6 per month, that range in severity. She is currently on prophylaxis for headaches and also has severe depression. Her current medications include:

- Sertraline
- Losartan
- Depakote
- TUMS (as-needed for heartburn)
- Nifedipine

197. Which medications should absolutely be discontinued today? Select all that apply.
    A. Sertraline
    B. Losartan
    C. Depakote
    D. Nifedipine

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198. Jane is complaining of a migraine headache today and is wondering what she could take. Which is the safest initial option for abortive migraine therapy?
    A. Acetaminophen
    B. Ibuprofen
    C. Sumatriptan
    D. Fioricet

199. Three weeks later, Jane presents to the ER with a hypertensive emergency. Which of the following agents would be the best choice for immediate reduction of blood pressure and for the safety of the fetus?
    A. Captopril
    B. Spironolactone
    C. Nitroprusside
    D. Labetalol

200. A 58-year-old male is rushed to your emergency department with complaints of chest pain. He is diagnosed with unstable angina. Which of the following assessments would be most appropriate to determine the likelihood of a cardiac ischemic event and help determine the urgency for further intervention?
    A. CHADS2-Vasc
    B. TIMI
    C. PHQ-9
    D. CURB-65

201. Which of the following is the most appropriate initial urate-lowering therapy for a patient with a history of recurrent gout attacks?
    A. Allopurinol
    B. Febuxostat
    C. Probenecid
    D. Colchicine

202. With respect to medication errors, which of the following is true?
    A. 'Wrong patient' errors are the most common medication errors
    B. Medication omissions are usually the highest risk errors
    C. Punitive action is the most effective strategy to improve patient safety
    D. A strong emphasis should be placed on minimizing errors with high risk medications like insulin, opioids, and anticoagulants

203. Which of the following would be the least effective strategy in assessing nurses' skill improvement following a presentation surrounding medication administration?
    A. Pre and post-testing
    B. Audit medication administration following presentation
    C. Evaluation forms for the speaker presenting the information
    D. Reviewing future medications error reports and comparing them to reports prior to the education

204. A 20-year-old female is seeking birth control. She has been reluctant to take birth control because her roommate complained about how it made her nauseous all the time. She is also worried about breakthrough bleeding. She would prefer a daily pill versus any other birth control administration method. Which would be the most appropriate?
    A. Levonorgestrel 0.1 mg/ethinyl estradiol 20 mcg once daily
    B. Norethindrone 0.35 mg once daily
    C. Mirena
    D. Norgestrel 0.5 mg/ethinyl estradiol 50 mcg

Answer the following 2 questions based on the following scenario:

JT is a 54-year-old male with rheumatoid arthritis and hyperlipidemia. He presents with an LDL of 194 mg/dL, triglyceride level of 143 mg/dL, total cholesterol of 296 mg/dL, and HDL of 58 mg/dL. He has a history of MI and is currently on simvastatin 20 mg daily.

205. Which action would be most appropriate?
    A. Education regarding lifestyle changes to reduce cholesterol
    B. Add Tricor
    C. Add niacin
    D. Recommend no changes
    E. Change simvastatin to atorvastatin 40 mg daily

In addition to simvastatin, he is also on:
- Leflunomide
- Prednisone
- Omeprazole
- Famotidine
- Aspirin

206. Which medication would be most likely to contribute to elevated triglycerides?
    A. Leflunomide
    B. Prednisone
    C. Omeprazole
    D. Famotidine

207. JS presents with increasing shortness of breath. He is 49 years old and has had pneumonia before, but not for a few years. He has not been recently hospitalized and has a mild fever of 101 degrees Fahrenheit. There is significant resistance to macrolide antibiotics in the community. Which of the following would be the most appropriate antibiotic selection for empiric treatment of community-acquired pneumonia?
    A. Ciprofloxacin
    B. Clarithromycin
    C. Doxycycline
    D. Vancomycin
    E. Metronidazole

208. A 35-year-old female has a history of substance abuse. She also has major depression and is on sertraline 150 mg daily. She has tried 200 mg per day in the past but felt too sedated on that dose. Her PCP feels that she needs additional therapy and would like to try an atypical antipsychotic that will have a low risk for weight gain as well as sedation. Which of the following would be most appropriate?
    A. Olanzapine
    B. Quetiapine
    C. Risperidone
    D. Aripiprazole

Answer the following 4 questions based upon the scenario below.

A new medication has been developed to help with the management of fever. The medication was given to one group of patients and a placebo was given to the other group of patients. The mean reduction in body temperature was (0.9-2.4 degrees Fahrenheit) with a confidence level of 95%.

209. What type of data is body temperature?
    A. Ratio
    B. Nominal
    C. Ordinal
    D. Interval

210. Which of the following would be false if the data follows a normal distribution?
    A. 95% of the data would fall within 2 standard deviations of the mean
    B. The mean is equal to the median
    C. Normal distribution classically follows a bell-shaped curve
    D. The standard deviation will equal the mode

211. Is this reduction in body temperature considered statistically significant?
    A. Yes
    B. No

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212. After review, it was noted that the participants in the treatment group had a higher average temperature at baseline than the placebo group. What type of bias would this most likely be?
    A. Recall
    B. Analytical
    C. Selection
    D. Observer

Answer the following three questions based on the following scenario:

A clinical trial has been set up and two groups were compared for reduced pain in fibromyalgia. One group received Fibrono 25 mg daily and the other received placebo. Fibrono significantly reduced the Somatic Symptoms Scale-8 (SSS-8) score with a p-value <0.001 compared to placebo.

213. What type of clinical research does this represent?
    A. Review article
    B. Controlled clinical trial
    C. Cohort
    D. Case study

214. What type of data is the SSS-8 scale?
    A. Ratio
    B. Nominal
    C. Ordinal
    D. Interval

215. Within a research article, under which heading would the detailed description of doses used and timeframe of the study generally be listed?
    A. Discussion
    B. Results
    C. Conclusion
    D. Methods

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Answer the following 5 questions based on the scenario below.

Researchers are looking at studying the use of hydrochlorothiazide as a preventative therapy for osteoporosis. They have set up two groups. One group will receive placebo and one will receive hydrochlorothiazide 25 mg daily. Over the course of one year, 25 of the 950 study participants in the hydrochlorothiazide group developed osteoporosis. In the placebo group, 33 of the 934 study participants developed osteoporosis. The p-value reported for the difference was 0.031 (alpha=0.05).

216. Did hydrochlorothiazide reduce the risk of osteoporosis?

A. Yes
B. No
C. Unclear based upon provided information

217. Calculate the absolute risk reduction. Round to the nearest tenth of a percent.

218. What is the relative risk? Round to the nearest whole percentage.

219. What is the relative risk reduction?

220. What is the Number Needed to Treat (NNT)? (Round to nearest whole number)

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221. You are asked to compound 1.5% triamcinolone cream. You currently have triamcinolone cream in strengths of 3% and 0.5%. How much 3% cream will this compound require if the order is written for 30 grams?

222. A female patient comes into the pharmacy to pick up her husband's prescriptions. She is of child bearing age. Which medication would you caution her about giving or touching?

A. Flomax
B. Pantoprazole
C. Finasteride
D. Tramadol

Answer the following three questions based on the information below.

Funnypenem 100 mg/kg per day IV has been ordered. The infusion is ordered every 12 hours. Funnypenem comes in 2 gram vials. The patient's current weight is 111 kg.

223. How many vials per dose are necessary?

To reconstitute 2 grams of Funnypenem, it requires 6.8 mL of diluent. After reconstitution, the vial will contain 10 mL with a concentration of 200 mg/mL. Funnypenem is usually added to a 50 mL bag of normal saline and infused over one hour.

224. What is the final concentration in the infusion bag (in mg/mL)? Round to the nearest tenth.

225. What is the powder volume of the Funnypenem vial? Round to the nearest tenth.

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BONUS QUESTIONS

HIV QUESTIONS

Which of the following HIV medications is associated with a risk of hypersensitivity reactions in patients with the HLA-B*5701 allele?

A. Abacavir
B. Rilpivirine
C. Darunavir
D. Tenofovir

What is the primary difference between tenofovir disoproxil fumarate (TDF) and tenofovir alafenamide (TAF) in terms of their use as antiviral agents in the treatment of HIV?

A. TDF is associated with higher rates of bone loss and renal toxicity compared to TAF.
B. TAF has a higher genetic barrier to resistance compared to TDF.
C. TAF is contraindicated in patients with HIV/HCV coinfection.
D. TDF is dosed less frequently than TAF.

Which of the following would be considered an appropriate initial antiretroviral regimen for a person with HIV?

A. Biktarvy
B. Apretude
C. Truvada
D. Descovy

In general, which of the following regimens are recommended for most persons with HIV?

A. 1 NNRTI + 2 INSTIs
B. 2 NRTIs + 1 INSTI
C. 1 PI + 1 NRTI + 1 NNRTI
D. 1 NNRTI + 2 NRTIs

For an HIV infected patient, at what CD4+ threshold should Mycobacterium avium complex (MAC) prophylaxis be initiated?

A. < 200 cells/mm3
B. < 100 cells/mm3
C. < 50 cells/mm3
D. < 25 cells/mm3

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ONCOLOGY QUESTIONS

Which of the following chemotherapeutic agents has a maximum lifetime cumulative dose due to cardiotoxicity?

A. Doxorubicin
B. Paclitaxel
C. Vinblastine
D. Bleomycin

Which of the following severe toxicity concerns is included in the boxed warning for bleomycin?

A. Cardiotoxicity
B. Ototoxicity
C. Pulmonary toxicity
D. Hepatotoxicity

Which of the following is a notable safety concern commonly associated with taxanes?

A. Hemorrhagic cystitis
B. Loss of hearing
C. Acute kidney failure
D. Peripheral neuropathy

Ifosfamide, a chemotherapy agent, is always given with mesna. What is the purpose of mesna when given as an adjunct to ifosfamide?

A. Acts as a pharmacokinetic booster
B. Acts downstream of ifosfamide to increase efficacy
C. Reduces the risk of myelosuppression
D. Reduces the risk of hemorrhagic cystitis

Which characteristic side effect is included in the boxed warning for irinotecan?

A. Peripheral neuropathy
B. Diarrhea
C. Loss of taste
D. Severe nausea and vomiting

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